##### **NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Unit 4: Book section 6.5**

##### ***Division of Polynomials***

**Type1: Cancelling**

**1.**  = **2.**

**3.** **4.**=

How were the above problems solved?

### **TRY THESE:**

5.  6. 

7.  8. 

### **Type 2: Can’t cancel things**

### **WAY #1: Long Division with Polynomials**

* Can only be used when dividing by a degree

**Degree** is the \_\_\_\_\_\_\_\_\_\_\_\_exponent of a polynomial.

Ex. (2x4+3x3 + 5x – 1) ÷ (x2 – 2x +2) Degree of 1st poly: \_\_\_\_ Degree of 2nd poly: \_\_\_

* **Steps:**

1. Check to see if you can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. If not, check if the degree is \_\_\_\_\_\_\_\_\_\_.
3. Write in long division format.
   1. Write \_\_\_\_ for any \_\_\_\_\_\_\_\_ terms
4. Divide
5. You have a remainder when \_\_\_\_\_\_\_\_\_\_\_.

**EXAMPLES:**

1. (2x4+3x3 + 5x – 1) ÷ (x2 – 2x +2) 2. (x3 + 2x2 – 6x – 9) ÷ (x + 3)

**TRY THESE:**

3. (14x4 – 5x3 –11x2 –11x + 8) ÷ (2x-1) 4. (15x3 – 2x2 +10x +12) ÷ (3x+2)

5. (10x3 +15x2 –45x – 25) ÷ (10x+5) 6. (10x3 +27x2 + 14x + 5) ÷ (x2 + 2x)

**WAY #2: Synthetic Division**

**Example:**

1. (2x4+3x3 + 5x – 1) ÷ (x2 – 2x +2) 2. (5x4 + 14x3 + 9x) ÷ (x2 + 3x)

**TRY THESE:**

3.  4. (2x2 +7x – 15) ÷ (x + 5)

5. (x2 – 9) ÷ (x + 7) 6. (2x4 + 2x3 – 10x – 9) ÷ (x3 + x2 – 5)

**EXTRA PRACTICE:**

**p. 356 #17, 19, 21 (long division) and #31, 33, 35, 37 (synthetic division)**